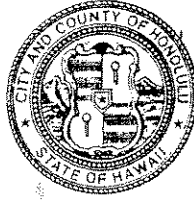


DEPARTMENT OF THE MEDICAL EXAMINER  
CITY AND COUNTY OF HONOLULU

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FIRST DEPUTY MEDICAL EXAMINER

Gayle F. Suzuki, M.D.  
DEPUTY MEDICAL EXAMINER

AUTOPSY REPORT  
Case No. 02-1079

RE: FUKUOKA, Mitsuko

DATE OF DEATH: August 16, 2002

DATE, TIME, AND PLACE OF EXAMINATION: August 19, 2002  
10:24 hrs.  
C & C Medical Examiner

BRIEF HISTORY:

The decedent is a 43-year-old Japanese national, a tourist from Japan, reportedly with no known medical history, who was not consulting a physician for any reason, not on any prescribed medications, had not complained of any pain or illness, and was a very good swimmer. She was participating in underwater diving consisting of walking along the ocean floor at a depth of 12-15 feet outfitted with a round plastic helmet fitting over her head and resting on her shoulders and attached to an air hose feeding compressed air from a barge. She signaled distress to an instructor/guide, then became unresponsive while being assisted in climbing the ladder to the barge. Resuscitation was initiated on site and continued in the emergency room of Castle Medical Center where she was admitted to the critical care unit. She died on the third hospital day despite therapy and was pronounced.

FINDINGS:

1. Diffuse severe occlusive coronary atherosclerosis.
2. Recent acute myocardial ischemic changes.
3. Increased myocardial interstitial and perivascular fibrosis.
4. Cardiomegaly, 450 grams, with left ventricular hypertrophy, 2.0 cm.

EXHIBIT 4

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5. Pulmonary edema with hyaline membranes evidencing diffuse alveolar damage.
6. Early acute bronchopneumonia.
7. Early anoxic encephalomyelopathy.
8. Cerebral edema with cerebellar tonsillar herniation.
9. No demonstrable evidence of pneumothorax or air embolism.
10. Anthracotic pigmentation in pulmonary lymphatic channels.
11. Mild emphysema.
12. Fatty liver, mild.
13. Leiomyomata uteri.

**CONCLUSION:**

Based on these autopsy findings and the investigative and historical information available to me, in my opinion, this 43-year-old woman died as a result of asphyxia due to drowning as a consequence of a diving accident. Her heart enlargement, diffuse severe coronary artery narrowing by lipids, areas of acute heart cell necrosis due to compromised blood supply, and areas of heart scarring reflecting patchy death of heart muscle due to chronically inadequate coronary blood supply all indicate that a cardiac event, most likely an arrhythmia, contributed to her drowning by causing her to lose consciousness, then to aspirate water from the air-water interface at the base of her diving helmet. She might have begun experiencing the irregular heart beats at the time she first signaled distress. Although her medical history is reported negative, the pattern of her heart enlargement suggests the presence of untreated, perhaps undiagnosed high blood pressure, which in itself and certainly in any combination with any of the above, would be a risk factor as well for cardiac arrhythmia. There was no evidence of air embolism but the depth of the dive would not appear to make air embolism likely. The finding of anthracotic pigmentation in her lungs, possibly from smoking or otherwise inhaling carbonaceous material, and mild emphysema suggests there may have been some decreased lung capacity as well, although this may have been subclinical. Other findings are by and large secondary to those described above.

**IMMEDIATE CAUSE OF DEATH:** a) Asphyxia by drowning, 994.1.

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Due to: b) Accidental drowning & submersion  
while engaged in sport or  
recreational activity w/ diving  
equipment, E910.1.

CONTRIBUTING CAUSE OF DEATH: a) Ischemic heart disease, 414.9.

b) Cardiomegaly, 429.3.

MANNER OF DEATH: The manner of death is, in my opinion, accidental.

COMPLETION DATE OF DEATH CERTIFICATE: August 19, 2002

  
WILLIAM W. GOODHUE, JR., M.D.  
FIRST DEPUTY MEDICAL EXAMINER  
September 6, 2002

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AUTOPSY PROTOCOL  
Department of the Medical Examiner  
City and County of Honolulu

This autopsy is performed by Dr. William W. Goodhue, Jr. with the assistance of Mr. Chris Paul.

**EXTERNAL EXAMINATION:** The body is identified by a tag on the right great toe and hospital identification bands on the right wrist and left forearm. It is completely disrobed when first seen and is unaccompanied by items of clothing. The body is that of a well-nourished, well-developed Japanese female of average build that appears compatible with the listed age of 43 years. The length is 63 inches and the weight is 130 pounds. It is well preserved and embalming has not been done.

**Rigor:** Well developed in masseter muscles and in the extremities.

**Lividity:** Present on posterior dependent parts.

**Temperature:** That of the refrigeration unit.

**Skin:** Unremarkable except as described elsewhere.

**Hair:** Straight, long, black, measuring 20 cm at the vertex.

**Scalp:** Unremarkable.

**Ears/Nose:** Unremarkable.

**Eyes:** Appear somewhat protuberant. There are no conjunctival petechiae or is conjunctival injection evident.

**Mouth/Lips:** Lips are pale. Maxillary, mandibular, and lingual frenulums are intact.

**Teeth:** In adequate repair. A mandibular incisor is absent, possibly artifactually related to resuscitative intubation procedures.

**Face/Neck:** Unremarkable except as described elsewhere.

**Chest/Breasts:** Unremarkable.

**Arms/Hands/Fingernails/Legs/Feet/Toenails:** Nail beds are pale. Otherwise, unremarkable.

**Abdomen:** Slightly scaphoid.

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Back/Anus: Unremarkable.

External Genitalia: Normal adult female.

IDENTIFYING MARKS (Scars, Tattoos, Other):

Scars:

1. Scars, multiple, variably sized, anterior left patella, ranging from 0.5 to 5 cm in greatest dimension, in an aggregate area 5 x 5 cm.
2. Scars, multiple, anterior left lower leg, ranging in size from 0.5 to 1 cm, in an aggregate area approximating 13 x 5 cm.
3. Scars, multiple, right lower leg, ranging in size from 0.5 to 3 cm, in an aggregate area approximating 19 x 8 cm.
4. Scars, multiple, anterior right patella, ranging in size from 0.5 to 2 cm, in an aggregate area approximating 7 x 5 cm.
5. Punctate depigmented scars, right inframaxillary, having dimensions up to 0.2 cm in cross dimension, in an aggregate area 2 x 1 cm.

Tattoos: None identified.

NEEDLE TRACKS/PUNCTURE WOUNDS: None identified.

MEDICATIONS WITH BODY: None.

EVIDENCE OF TREATMENT:

1. Nasogastric tube
2. Endotracheal tube
3. Vascular access sites, right jugular area, left antecubital fossa, left wrist, right antecubital fossa, right forearm, right wrist

EVIDENCE OF INJURY: None.

INTERNAL EXAMINATION:

Head/Central Nervous System: Reflection of the scalp shows the usual scattered reflection petechiae. The calvarium is intact. Removal of the calvarium shows the epidural space to be normal. No collections of subdural blood are present. The brain

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is removed in the usual manner and weighs 1,560 grams. The leptomeninges are smooth and glistening. Convexities of the cerebrum and cerebellum are symmetrical. The gyri are diffusely widened and the sulci are diffusely thinned. The brain subjectively appears diffusely softened. There is notching bilaterally of the cerebellar tonsils. The vessels at the base of the brain are normally located and no anomalies or significant atherosclerosis is identified. Serial sections of the brain show the cerebral cortical ribbon to be intact. The lateral ventricles are normal. Sections show bilateral dusiness of the basal ganglia with punctate prominence of vascularity. The usual anatomical landmarks of the cerebrum, midbrain, cerebellum, pons and medulla demonstrate no abnormalities. Removal of the dura from the base of the skull shows the usual anatomical features without abnormalities. The pituitary fossa is unremarkable. The foramen magnum demonstrates the normal orientation and the first portion of the spinal cord viewed through the foramen magnum is unremarkable. The spinal cord is removed from the low cervical through the high sacral areas by an anterior approach and subjectively shows patchy softening. There is no epidural, subdural, subarachnoid, or intraparenchymal hemorrhage involving the spinal cord.

Neck Organs: Examination of the soft tissues, cartilaginous and bony structures of the neck demonstrates no abnormalities with the usual anatomical relationships preserved. Dissection of neck musculature shows no evidence of soft tissue hemorrhages or fractures of bony or cartilaginous structures.

Body Cavities: Pneumothorax is not demonstrable by inserting a fluid-filled syringe into both pleural cavities prior to opening the body. The body cavities are opened in the usual manner. The pleural and peritoneal surfaces are smooth and glistening and the pericardium is unremarkable. The mediastinum and retroperitoneum show the usual anatomical features. The leaves of the diaphragm are intact and the organs are anatomically located. There is no internal evidence of injury within the thoracic or abdominal cavities.

Cardiovascular System: The heart weighs 450 grams. Air embolism is not identifiable by inserting a fluid-filled syringe into chambers of the heart immediately after reflecting the pericardium and prior to incising the heart and great vessels. Examination of the epicardium shows it to be intact. The chambers demonstrate the usual shape. The right and left ventricular wall thicknesses respectively measure 2 and 0.3 cm. The interventricular septum at the same level measures 2 cm in thickness. The coronary arteries are normally configured but have lumina which are multifocally and diffusely severely narrowed over 75% by lipid deposits. Although this process is diffuse, the left coronary artery distribution is more affected



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than is that of the right. Cut surfaces of the myocardium show a normal color. The valves are intact with the usual anatomical relationships. The aorta follows the usual course and exhibits mild atherosclerosis in the form of yellow streaking, principally in its abdominal portion. The origins of the major vessels are normally located and unremarkable. The great vessels of the venous return are in the usual position and unremarkable.

Respiratory System: The larynx, trachea and bronchi have lumina containing abundant finely frothy, foamy material. The right and left lungs weigh 1,000 and 870 grams, respectively, and appear diffusely and firmly distended with prominence of subpleural lymphatic channels. Cut surfaces show diffusely dusky, red rubbery parenchyma with finely frothy fluid exuding spontaneously and more prominently under pressure from all portions of both lungs. The pulmonary vessels occupy the usual relationships without evidence of emboli.

Hepatobiliary System: The liver weighs 1,500 grams and has a smooth, glistening surface. Cut surfaces show the usual anatomical landmarks with a deep red parenchyma. The gallbladder contains approximately 40 cc of bile and no abnormalities are present in the mucosal lining. The biliary tree is normally located and no abnormalities are demonstrated.

Lymphoreticular System: The spleen weighs 120 grams and has a smooth, glistening capsule and an unremarkable parenchyma. The thymus is unremarkable for age. The lymph nodes show no notable pathological change.

Urinary System: The right and left kidneys weigh 230 and 250 grams, respectively. The cortical surfaces are smooth and glistening with good preservation of the cortex and good cortico-medullary differentiation. The pelves and ureters are unremarkable. The bladder is unremarkable and contains 40 cc of straw-colored urine.

Internal Genitalia: Examination of the vaginal vault internally shows the usual rugal pattern without abnormalities. The uterus occupies the usual position and is of a normal size. Subserosal uterine leiomyomas are identified. The endometrium is unremarkable. The adnexa lie in the usual position with normal gross anatomical features.

Gastrointestinal Tract: The pharynx and esophagus are unremarkable. The stomach lies in a normal position and contains 50 cc of somewhat flocculent-appearing watery material amidst which no pills, tablets, or other medicaments can be identified. The mucosal lining of the stomach is intact. The small bowel and large bowel are unremarkable. The appendix is present.

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Endocrine System: The pituitary, thyroid, adrenals and pancreas show the usual anatomical features without evidence of natural disease or injury.

Musculoskeletal System: No fractures are identified and the skeletal muscle demonstrates the normal appearance. The bone marrow where visualized is unremarkable.

Miscellaneous: The abdominal fat measures approximately 5 cm in thickness without abnormalities. No hernias are identified.

TOXICOLOGY: See attached report of Medical Examiner Laboratory.

**MICROSCOPIC:**

Coronary arteries:

Severe occlusive coronary atherosclerosis

Heart: Myocyte hypertrophy

Patchy increase in myocardial interstitial and perivascular fibrosis

Severe obliterative fibrous scarring in papillary muscles of the mitral valve with myocardial contraction band necrosis in papillary of mitral valve evidencing recent ischemic myocardial injury

Lungs: Anthracotic pigmentation in peribronchial lymph nodes

Presence of germinal centers in focal peribronchial lymph node follicles

Acute congestion with patchy fresh confluent intra-alveolar hemorrhage

Presence of intra-alveolar histiocytes

Pulmonary edema

Ectasia of pulmonary lymphatic channels

Patchy presence of hyaline membranes

Early acute bronchopneumonia



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Lungs: Asymmetrical fibrous intimal proliferation of major pulmonary arterial channels, consistent with pulmonary arterial atherosclerosis

Hyperexpansion and patchy confluence of terminal air spaces, suggestive of emphysema

Liver: Acute congestion

Mild macrovesicular steatosis, mid zonal

Spleen: Acute congestion

No follicular centers identified in Malpighian corpuscles

Adrenals: Acute congestion

Kidney: Acute congestion

Focal glomerulosclerosis

Intraparenchymal vascular sclerosis

Tongue: No contusion identified

Thyroid: Acute congestion

CNS: Hippocampus, cerebellar cortex, and pons evaluated

Basal ganglia, cerebellum, and pons evaluated

Anoxic changes identified with acute congestion, neuronal dropout, focal small vessel thrombosis, prominence of engorged capillary channels suggestive of early neovascularity, segmental rarefaction of the neuropil, focal intraparenchymal mineralizations, focal fresh intraparenchymal hemorrhages, widespread dropout of Purkinje cells with marked rarefaction of underlying neuropil, and eosinophilia of neurons along the sweep of the dentate nucleus.

Spinal cord: Multiple levels evaluated

Subjective paucity of anterior horn motor neurons

Focal central chromatolysis in anterior horn motor neurons

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Spinal cord: Segmental anoxic myelopathy including  
vascular congestion, patchy intraparenchymal  
hemorrhages, neuronal dropout, and patchy  
necrosis of the neuropil

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CITY AND COUNTY OF HONOLULU  
DEPARTMENT OF THE MEDICAL EXAMINER

## LABORATORY REPORT FORM

Name of Deceased: FUKUOKA, Mitsuko  
Requested by: WILLIAM W. GOODHUE, JR., M.D.

Case no: 02-1079\*

## SPECIMENS

<input checked="" type="checkbox"/> BLOOD	<input checked="" type="checkbox"/> VITREOUS	<input checked="" type="checkbox"/> BILE	<input checked="" type="checkbox"/> NaF
<input checked="" type="checkbox"/> URINE	<input type="checkbox"/> GASTRIC	<input checked="" type="checkbox"/> ORGANS	<input type="checkbox"/> OTHER:
<input checked="" type="checkbox"/> HOLD	<input type="checkbox"/> SAVE	<input type="checkbox"/> DISCARD	

## TESTS REQUESTED/RESULTS

## ALCOHOL CONTENT

<input checked="" type="checkbox"/> WHOLE BLOOD:	.000	%
<input type="checkbox"/> VITREOUS:	.	%
<input type="checkbox"/> URINE:	.	%

## ACID PHOSPHATASE (QUAL.)

<input type="checkbox"/> VAGINAL:
<input type="checkbox"/> ANAL:
<input type="checkbox"/> ORAL:

## ACID PHOSPHATASE (QUANT.)

<input type="checkbox"/> VAGINAL:	U/L
<input type="checkbox"/> ANAL:	U/L
<input type="checkbox"/> ORAL:	U/L

## BLOOD TYPE

<input type="checkbox"/> RH:
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## CARBON MONOXIDE

<input type="checkbox"/> % SATURATED
--------------------------------------

## CHLORIDE

<input type="checkbox"/> LEFT HEART:	MEQ/L
<input type="checkbox"/> RIGHT HEART:	MEQ/L

## CULTURE

<input type="checkbox"/> SENT TO STATE BOARD ON:	/ /
--	-----

## SPERMATOZOA

<input type="checkbox"/> VAGINAL:
<input type="checkbox"/> ANAL:
<input type="checkbox"/> ORAL:

<input checked="" type="checkbox"/> TOXICOLOGY SCREEN
<input checked="" type="checkbox"/> HISTOLOGY: 15
<input checked="" type="checkbox"/> SPECIAL: 5

<input type="checkbox"/> TOXICOLOGY QUANTITATIVE
SENT TO:
DATE: / /

Karen A. Roeller

Technologist  
08/26/2002

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TOXICOLOGY SCREEN:

BLOOD, URINE (0.5 ML):

BLOOD: PROBABLE ACETAMINOPHEN